Message

From: Walker, Stuart [Walker.Stuart@epa.gov]
Sent: 1/24/2020 6:50:41 PM
To: Praskins, Wayne [Praskins.Wayne@epa.gov]
Subject: RE: Hunters Point RESRAD BUILD files

In general, first step would be run both models with the Superfund defaults and any site-specific changes, so as closely matched as possible to compare apples to apples. If there is a significant difference for any radionuclides and/or exposure route, then try and figure out why. Then figure out if the reason why is actually better for that portion of the site risk assessment to switch to an alternative model, this would also include thinking about would something similar be done with the risk assessment for chemicals and is there a way to simulate that better feature within the PRG/DCC calculators, which may involve some work outside the calculators being brought into the calculators. Its kinda hard to know the exact step until you start walking through it.

Stuart Walker
Superfund Remedial program National Radiation Expert
Science Policy Branch
Assessment and Remediation Division
Office of Superfund Remediation and Technology Innovation
W (703) 603-8748
C (202) 262-9986

From: Praskins, Wayne <Praskins.Wayne@epa.gov>
Sent: Friday, January 24, 2020 1:25 PM
To: Walker, Stuart <Walker.Stuart@epa.gov>
Subject: RE: Hunters Point RESRAD BUILD files

Wouldn't comparing the values be a first step to see if there are differences and get a sense whether any differences could have a significant impact on the risk estimates?

Wayne Praskins | Superfund Project Manager
U.S. Environmental Protection Agency Region 9
75 Hawthorne St. (SFD-7-3)
San Francisco, CA 94105
415-972-3181

From: Walker, Stuart <Walker.Stuart@epa.gov>
Sent: Friday, January 24, 2020 10:21 AM
To: Praskins, Wayne <Praskins.Wayne@epa.gov>
Subject: RE: Hunters Point RESRAD BUILD files

Well only if they were redoing the runs. I would tell the Navy to redo the runs with the current SF's and DCF's if we were consulting. Otherwise Julie may want to note that it is a difference in the BPRG/BDCC and RESRAD Build runs.

Stuart Walker
Superfund Remedial program National Radiation Expert
Science Policy Branch
Assessment and Remediation Division
Office of Superfund Remediation and Technology Innovation
W (703) 603-8748
C (202) 262-9986

From: Praskins, Wayne <Praskins.Wayne@epa.gov>
Sent: Friday, January 24, 2020 1:18 PM
To: Walker, Stuart <Walker.Stuart@epa.gov>
Subject: RE: Hunters Point RESRAD BUILD files

You want Julie's group to compare the SFs and DCFs? And evaluate the impact of any differences?

Wayne Praskins | Superfund Project Manager
U.S. Environmental Protection Agency Region 9
75 Hawthorne St. (SFD-7-3)
San Francisco, CA 94105
415-972-3181

From: Walker, Stuart <Walker.Stuart@epa.gov>
Sent: Friday, January 24, 2020 10:13 AM
To: Praskins, Wayne <Praskins.Wayne@epa.gov>
Subject: RE: Hunters Point RESRAD BUILD files

They didn't provide any reference (I just word searched using HEAST, 12, and 72). Just this paragraph.

3.1 Dose and Risk Library

Two custom libraries were created using the RESRAD Dose Conversion Factor (DCF) Editor, Version 2.5 (2009) embedded as a tool in RESRAD-BUILD. The custom library called HPNS Adult uses DCFs for external exposures from Federal Guidance Report (FGR) No. 12 (USEPA 1993), DCFs for inhalation and ingestion exposures from International Commission on Radiological Protection Publication 72 (ICRP 1995) for adults, and risk coefficients for total cancer morbidity from the Health Effects Assessment Summary Tables (HEAST) (USEPA 2001). The custom library called HPNS Child uses DCFs for external exposures from FGR 12 (USEPA 1993), DCFs for inhalation and ingestion exposures from ICRP 72 (ICRP 1995) for children (age 15), and risk coefficients for total cancer morbidity from HEAST (USEPA 2001).

They also may have used FGR 11

Table 2. Input Values Used to Calculate Peak Doses and Total Risks in RESRAD-BUILD

Input Tab	Parameter	Default Value	Indoor Worker Value	Resident Value	
				Child	Adult
Case	Dose/Risk Library	FGR 11	HPNS Adult	HPNS Child	HPNS Adult
Time Parameters	Exposure Duration (for dose)	365 d	365 d		
	Exposure Duration (for risk)	365 d	9,125 d (25 years)	2,190 d (6 years)	7,300 d (20 years)
	Indoor Fraction	0.5	0.68	0.96	
	Evaluation Times (for dose)	0 yr	0 yr		

In the 2014 rad version of the Radiation Risk Assessment for CERCLA Sites: Q&A guidance we recommend the SF's and DCF's used in the PRG and DCC calculators. These would also be inputs that should be used when running another model per Q16.

Q16. What calculation methods or multimedia radionuclide transport and exposure models are recommended by EPA for Superfund risk assessments?

A. The PRG calculators (U.S. EPA 2002a, 2007, 2009a), which are used to develop risk-based PRGs for radionuclides, are recommended by EPA for Superfund remedial radiation risk assessments. These risk and dose assessment models are similar to EPA's methods for chemical risk assessment at CERCLA sites. Guidance on how to use each calculator, the default input parameters and their sources, is provided in the user guide for each calculator. In addition, a tutorial for using the PRG calculator is included in module 3 of the on-line training course *Radiation Risk Assessment: Update and Tools* (ITRC 2007), and a tutorial for the BPRG and SPRG calculators is provided in module 3 of the on-line training course *Decontamination and Decommissioning of Radiologically-Contaminated Facilities* (ITRC 2008b). The PRG calculator superseded the *Soil Screening Guidance for Radionuclides* (Rad SSG) calculator (U.S. EPA 2000e).

To avoid unnecessary inconsistency between radiological and chemical risk assessment at the same site, users should generally use the same model for chemical and radionuclide risk assessment. If there is a reason on a site-specific basis for using another model justification for doing so should be developed. The justification should include specific supporting data and information in the administrative record. The justification normally would include the model runs using both the recommended EPA PRG model and the alternative model. Users are cautioned that they should have a thorough understanding of both the PRG recommended model and any alternative model when evaluating whether a different approach is appropriate. When alternative models are used, the user should adjust the default input parameters to be as close as possible to the PRG inputs, which may be difficult since models tend to use different definitions for parameters. Numerous computerized mathematical models have been developed by EPA and other organizations to predict the fate and transport of radionuclides in the environment; these models include single-media unsaturated zone models (for example, groundwater transport) as well as multi-media models. These models have been designed for a variety of goals, objectives, and applications; as such, no single model may be appropriate for all site-specific conditions. Generally, even when a different model is used to predict fate and transport of radionuclides through different media, EPA recommends using the PRG calculators for the remedial program to establish the risk-based concentrations to ensure consistency with CERCLA, the NCP and EPA's Superfund guidance for remedial sites.

Q21. What are radionuclide slope factors?

A. EPA has developed slope factors for estimating incremental cancer risks resulting from exposure to radionuclides via inhalation, ingestion, and external exposure pathways. Slope factors for radionuclides represent the probability of cancer incidence as a result of a unit exposure to a given radionuclide averaged over a lifetime using the linear no-threshold model. It is the age-averaged lifetime excess cancer incident rate per unit intake (or unit exposure for external exposure pathway) of a radionuclide (U.S. EPA 1989a).

EPA recommends the slope factors that are used in the PRG calculators for CERCLA remedial radiation risk estimates (U.S. EPA 2002a, 2007, and 2009a). Current radionuclide slope factors incorporate the age- and gender-specific radiogenic cancer risk models from *Federal Guidance Report No. 13: Cancer Risk Coefficients for*

Environmental Exposure to Radionuclides (U.S. EPA 1999c), which assume a maximum lifetime for an individual of 120 years, but incorporate competing causes of death over a 120 year lifetime.

Q22. What are radionuclide dose conversion factors?

A. Dose conversion factors (DCFs), or "dose coefficients", for a given radionuclide represent the dose equivalent per unit intake (i.e., ingestion or inhalation) or external exposure of that radionuclide. These DCFs are used to convert the amount of radionuclide externally exposed, ingested, or inhaled to a radiation dose from an environmental sample of modeled estimate of radionuclide concentration in soil, air, water, or foodstuffs. DCFs may be specified for specific body organs or tissues of interest, or as a weighted sum of individual organ dose, termed the effective dose equivalent. (These quantities are discussed further in Q23.) These DCFs may be multiplied by the total activity of each radionuclide inhaled or ingested per year, or the external exposure concentration to which a receptor may be exposed, to estimate the dose equivalent to the receptor.

EPA recommends the DCFs that are used in the DCC calculators for CERCLA remedial dose assessments (U.S. EPA 2004a, 2010a, and 2010b). The most up to date radionuclide DCFs in the current DCC calculators, ICRP 60, incorporate age- and gender-specific models and are from the CD supplement to *Federal Guidance Report No. 13: Cancer Risk Coefficients for Environmental Exposure to Radionuclides* (U.S. EPA 1999c).

Stuart Walker
Superfund Remedial program National Radiation Expert
Science Policy Branch
Assessment and Remediation Division
Office of Superfund Remediation and Technology Innovation
W (703) 603-8748
C (202) 262-9986

From: Praskins, Wayne <Praskins.Wayne@epa.gov>
Sent: Friday, January 24, 2020 11:53 AM
To: Walker, Stuart <Walker.Stuart@epa.gov>
Subject: RE: Hunters Point RESRAD BUILD files

You could check the Battelle memo the Navy provided in October. I sent it to you awhile ago, and attached it to this message.

Wayne Praskins | Superfund Project Manager
U.S. Environmental Protection Agency Region 9
75 Hawthorne St. (SFD-7-3)
San Francisco, CA 94105
415-972-3181

From: Walker, Stuart <Walker.Stuart@epa.gov>
Sent: Friday, January 24, 2020 7:51 AM
To: Praskins, Wayne <Praskins.Wayne@epa.gov>; Clements, Julie A CIV (USA) <Julie.A.Clements@usace.army.mil>
Subject: RE: Hunters Point RESRAD BUILD files

Did they provide a rationale for choice of DCF's and SF's?

Stuart Walker
Superfund Remedial program National Radiation Expert

Science Policy Branch
Assessment and Remediation Division
Office of Superfund Remediation and Technology Innovation
W (703) 603-8748
C (202) 262-9986

From: Praskins, Wayne <Praskins.Wayne@epa.gov>
Sent: Thursday, January 23, 2020 6:29 PM
To: Clements, Julie A CIV (USA) <Julie.A.Clements@usace.army.mil>
Cc: Walker, Stuart <Walker.Stuart@epa.gov>
Subject: Hunters Point RESRAD BUILD files

Attached are:

1.) RESRAD Build files (input files) corresponding to all output files.

2.) A copy of the two custom dose conversion factor/slope factor libraries created using the RESRAD Dose Conversion Factor (DCF) Editor, labeled 'HPNS Adult' and 'HPNS Child'.
[It is noted that the DCFs for external exposures for adults were obtained from Federal Guidance Report (FGR) No. 12 (USEPA 1993), DCFs for inhalation and ingestion exposures from International Commission on Radiological Protection Publication 72 (ICRP 1995); and risk coefficients for total cancer morbidity were obtained from the Health Effects Assessment Summary Tables (HEAST) (USEPA 2001).]

Wayne Praskins | Superfund Project Manager
U.S. Environmental Protection Agency Region 9
75 Hawthorne St. (SFD-7-3)
San Francisco, CA 94105
415-972-3181

From: Craig Bias <cbias@remwerks.com>
Sent: Wednesday, October 23, 2019 6:43 AM
To: Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1@navy.mil>
Cc: Praskins, Wayne <Praskins.Wayne@epa.gov>
Subject: RE: Evaluation of RGs for Buildings

Wayne,
As requested, attached are all of the referenced and used BUILD input files (.BLD) and the two dose and risk factor libraries (.DCF) created.

Craig
Craig-Alan Bias, PhD, CHP, RRPT
Principal
Remwerks LLC
www.linkedin.com/company/remwerks/
Office: 210-320-1285 Ex. 6 Personal Privacy (PP)